VIRGINIA STANDARDS OF LEARNING

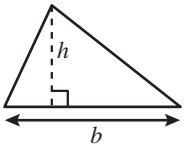
Spring 2006 Released Test

GRADE 7
PLAIN ENGLISH MATHEMATICS

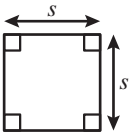
CORE 1

Grade 7 Mathematics Formula Sheet

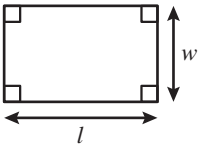
Geometric Formulas



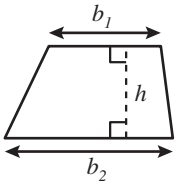
$A = \frac{1}{2}bh$



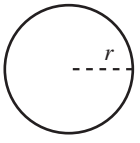
$p = 4s$
$A = s^2$



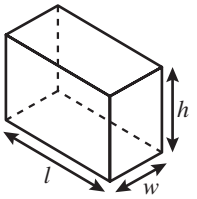
$p = 2l + 2w$
$A = lw$



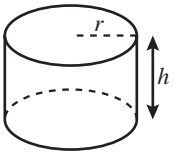
$A = \frac{1}{2}h(b_1 + b_2)$



$C = 2\pi r$
$A = \pi r^2$



$V = lwh$
$S.A. = 2lw + 2lh + 2wh$



$V = \pi r^2 h$
$S.A. = 2\pi rh + 2\pi r^2$

Abbreviations

milligram	mg
gram	g
kilogram	kg
milliliter	mL
liter	L
kiloliter	kL
millimeter	mm
centimeter	cm
meter	m
kilometer	km
square centimeter	cm^2
cubic centimeter	cm^3

ounce	oz
pound	lb
quart	qt
gallon	gal.
inch	in.
foot	ft
yard	yd
mile	mi.
square inch	sq in.
square foot	sq ft
cubic inch	cu in.
cubic foot	cu ft

area	*A*
perimeter	*p*
circumference	*C*
volume	*V*
total surface area	*S.A.*

year	yr
month	mon
hour	hr
minute	min
second	sec

Pi

$\pi \approx 3.14$

$\pi \approx \frac{22}{7}$

DIRECTIONS
Read and solve each question. Then mark the space on your answer document for the best answer.

SAMPLE

Which is less than 1.0618?

A 1.1061
B 1.0608
C 1.1618
D 1.0628

1 Joe answers 12 of the 15 questions on his test. What percent of the questions does Joe answer?

A 60%
B 75%
C 80%
D 84%

2 The high temperature is 19°F. The low temperature is −7°F. What is the difference between the low temperature and the high temperature?

F 7°F
G 12°F
H 25°F
J 26°F

GO ON

3

Map Scale

$\frac{1}{2}$ **inch = 3 miles**

The distance between two towns on the map is $3\frac{1}{8}$ inches. What is the distance in miles?

A $18\frac{3}{4}$ miles

B $9\frac{3}{8}$ miles

C $3\frac{5}{8}$ miles

D $\frac{1}{2}$ mile

4 **A meal costs $63.00 at a restaurant. How much is a 15% tip?**

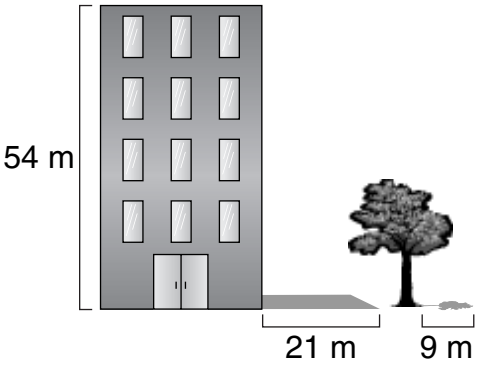
F $78.00

G $72.45

H $9.45

J $5.00

5



How tall is the tree?

A 4 m

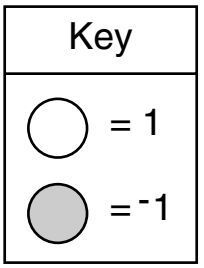
B 18 m

C 23 m

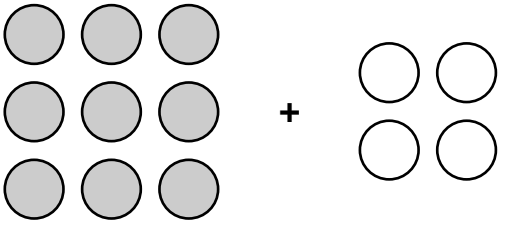
D 126 m

GO ON

6



Use the key. What is the result of the operation below?



F $^{-}13$

G $^{-}5$

H 5

J 13

7 Chris put $1,500 in the bank. The rate is 5% a year. How much interest will Chris earn in a year?

A $750

B $500

C $75

D $50

Do not turn the page until your teacher tells you to do so.

STOP

8 **What percent is $\frac{5}{8}$?**

F 16%

G 37.5%

H 58%

J 62.5%

9 **Mark uses order of operations to simplify $8 - 4 \div 2 + 3 \cdot 5$. Which operation does Mark use first?**

A $8 - 4$

B $4 \div 2$

C $2 + 3$

D $3 \cdot 5$

10 **Which fractions are in order from least to greatest?**

F $\frac{3}{7}, \frac{4}{5}, \frac{5}{11}, \frac{7}{9}$

G $\frac{4}{5}, \frac{3}{7}, \frac{7}{9}, \frac{5}{11}$

H $\frac{3}{7}, \frac{7}{9}, \frac{5}{11}, \frac{4}{5}$

J $\frac{3}{7}, \frac{5}{11}, \frac{7}{9}, \frac{4}{5}$

11 **Which number sentence shows the commutative property of multiplication?**

A $14 + (13 \cdot 7) = 14 + (7 \cdot 13)$

B $14 + (13 \cdot 7) = 13 + (14 \cdot 7)$

C $14 + (13 \cdot 7) = 14 \cdot 13 + 14 \cdot 7$

D $14 + (13 \cdot 7) = (14 + 13) \cdot 7$

12 $$\frac{1}{7} \cdot y = \frac{1}{7}$$

The number sentence is true. What is y?

F Additive identity

G Additive inverse

H Multiplicative identity

J Multiplicative inverse

GO ON

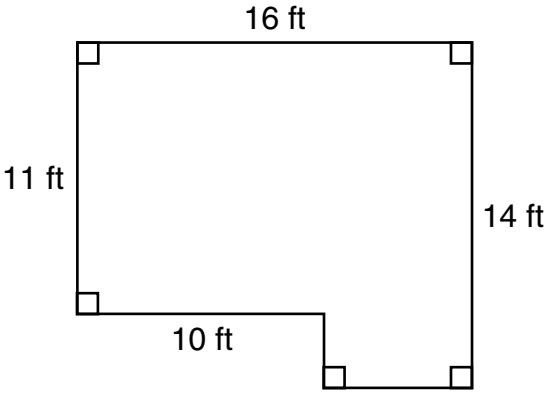
13 $$\frac{10 + 30 \div 5}{28 \div 7 \cdot 2} =$$

A 8
B 4
C 2
D 1

14 What is 45 million in scientific notation?

F 4.5×10^6
G 4.5×10^7
H 4.5×10^8
J 4.5×10^9

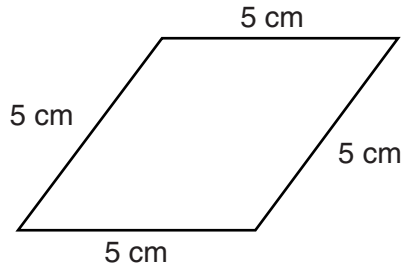
15 Lee is covering this floor with carpet.



What is the least amount of carpet she needs?

A 51 sq ft
B 60 sq ft
C 194 sq ft
D 244 sq ft

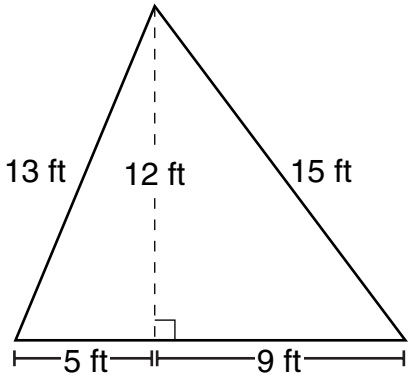
16 Look at this shape.



What is this shape?

F Square
G Rhombus
H Rectangle
J Nonagon

17

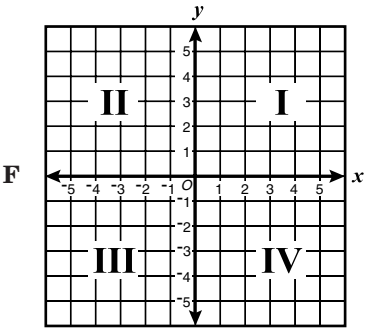


What is the total area of the figure shown?

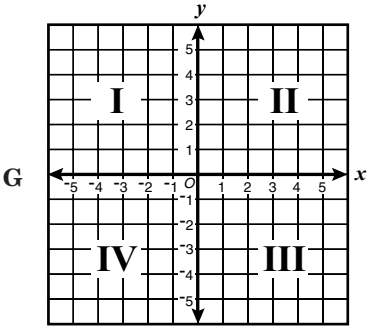
A 42 sq ft
B 84 sq ft
C 135 sq ft
D 168 sq ft

18 Which coordinate grid has the quadrants correctly labeled?

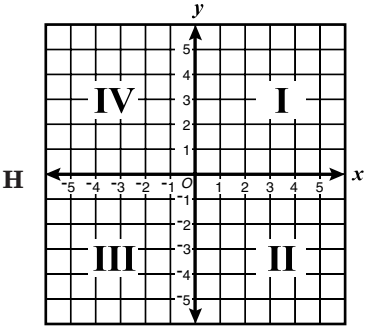
F



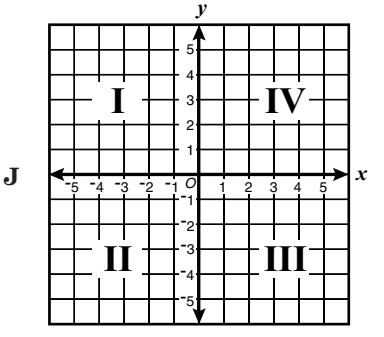
G



H



J



GO ON

19 **A cylinder has a diameter of 3 feet and a height of 4.5 feet. Anna fills the cylinder with water. What is the least amount of water she needs?**

A 32 cu ft
B 49 cu ft
C 71 cu ft
D 98 cu ft

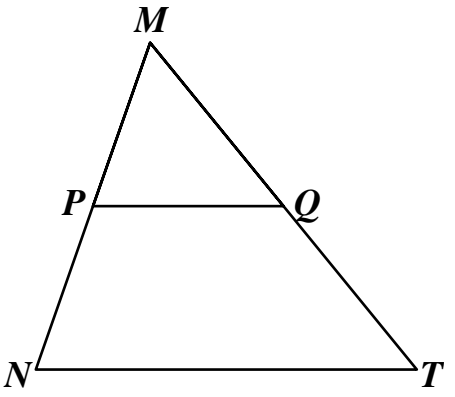
20 **How many angles does a heptagon have?**

F 6
G 7
H 8
J 9

21 **A circle has a radius of 7 inches. Which is closest to the area of the circle?**

A 39 sq in.
B 44 sq in.
C 138 sq in.
D 154 sq in.

22 **Triangle *MNT* is similar to triangle *MPQ*.**



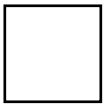
Which side of triangle *MNT* corresponds to side $\overline{MP}$?

F $\overline{MN}$
G $\overline{PN}$
H $\overline{MQ}$
J $\overline{QT}$

GO ON

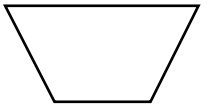
23 Which polygon is *not* a quadrilateral?

A

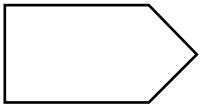


B

C



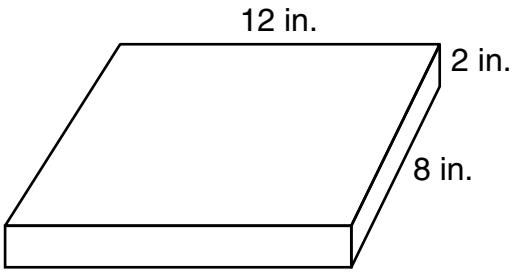
D



24 On a regular coordinate grid, the point (⁻7, 10) is in which quadrant?

F I
G II
H III
J IV

25

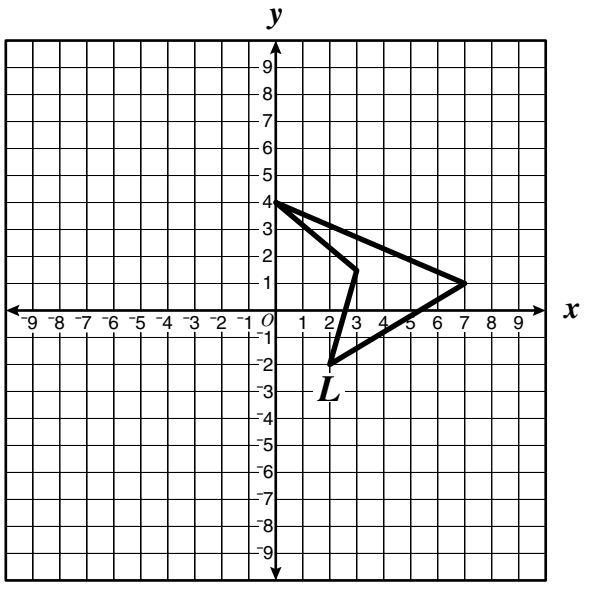


How much paper do you need to cover all of the box?

A 96 sq in.
B 136 sq in.
C 192 sq in.
D 272 sq in.

GO ON

26 **Translate the figure horizontally $^{-}5$ units.**



Which best describes the location of the image of vertex *L*?

F $(^{-}3, ^{-}2)$

G $(^{-}2, ^{-}3)$

H $(2, ^{-}7)$

J $(^{-}7, 2)$

27

Lunch Choices

Main Dish	Side Dish	Drink
Hamburger	Salad	Milk
Turkey sandwich		Iced tea
Chicken strips	Fruit	Juice

How many different lunch combinations of 1 main dish, 1 side dish, and 1 drink are possible?

A 6

B 9

C 18

D 27

GO ON

28 Bob earned these 4 test scores.

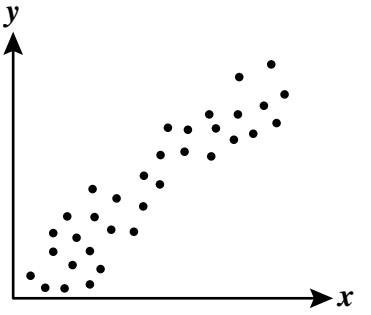
95, 90, 85, 95

Bob wants the mean of 5 scores to be 90. What does Bob need to score on the 5th test to get exactly a mean of 90?

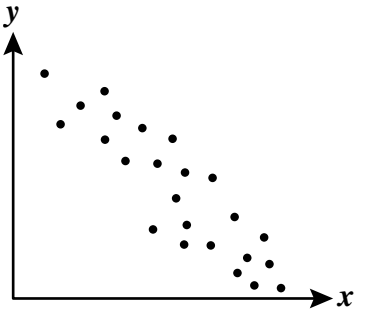
F 90
G 85
H 80
J 75

29 Which scatterplot shows a positive relationship between x and y?

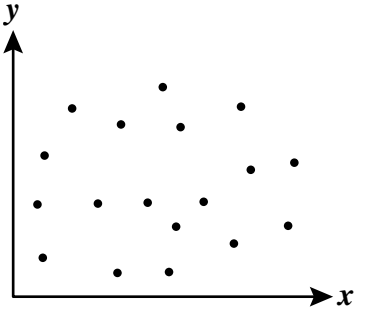
A



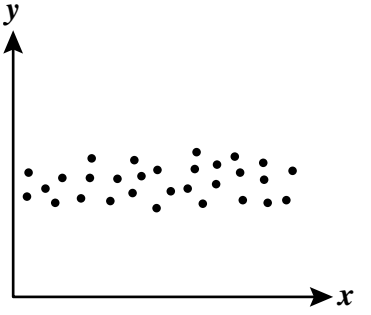
B



C



D



GO ON

30 **In a stack of 52 cards, 4 are red. Jane picks a card without looking. What is the probability that the card is red?**

F $\frac{1}{52}$

G $\frac{1}{13}$

H $\frac{1}{12}$

J $\frac{4}{13}$

31 **26, 68, 68, 62**

What is the median?

A 56
B 62
C 65
D 68

32 **The six sides of a cube are numbered 1 through 6. John drops the cube and records the number that is on the top side. John drops the cube 300 times. How many times does John expect to see the number 5 on the top side of the cube?**

F 50
G 100
H 200
J 250

33 **Mark has a basket of 40 yellow beans and 35 white beans. Mark takes a bean without looking. What is the probability the bean will be yellow?**

A $\frac{8}{7}$

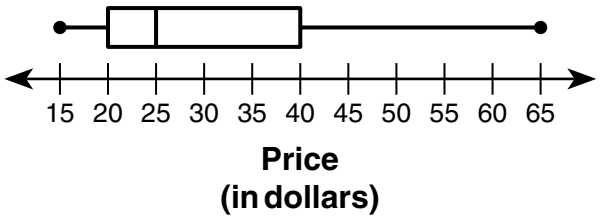
B $\frac{7}{8}$

C $\frac{8}{15}$

D $\frac{7}{15}$

GO ON

34



You can use the box-and-whisker plot to find —

F the mean and the range
G the mean and the mode
H the median and the mode
J the median and the range

35

Mall Customers

Age Group	Tally	Frequency	Cumulative Frequency
1 to 10	𝍸 𝍸 |||	13	13
11 to 20	𝍸 |||	8	21
21 to 30	𝍸 𝍸 𝍸 ||	17	38
31 to 40	𝍸 ||||	9	47
41 to 50	𝍸 𝍸 𝍸 |||	18	65

Which age group has twice as many customers as the 31- to 40-year-old age group?

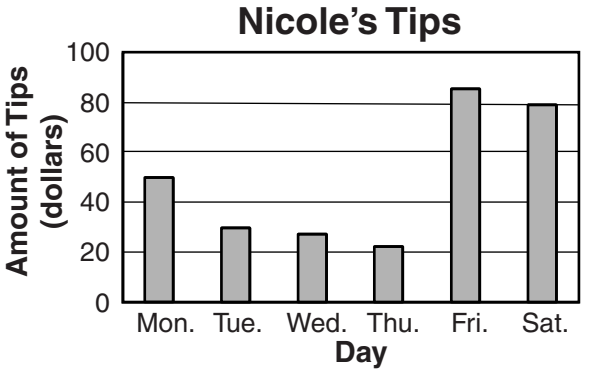
A 1 to 10
B 11 to 20
C 21 to 30
D 41 to 50

36 A restaurant dinner includes a main dish, a vegetable, a salad, and a roll. The menu has 4 main dishes, 7 vegetables, 1 salad, and 1 roll. Which shows the total number of different dinner combinations?

F $4 + 7 + 1 + 1$
G $4 \cdot 7 \cdot 2$
H $4 + 7$
J $4 \cdot 7 \cdot 1 \cdot 1$

GO ON

37 Nicole works at a restaurant and gets tips from customers.



Which day's tip amount is closest to the mean (average) for the six days?

A Monday
B Wednesday
C Thursday
D Friday

38 Look at these numbers.

55
54
33
33
8
5

Which has the *greatest* value?

F Mean
G Median
H Mode
J Range

GO ON

39 What is the common difference of this arithmetic sequence?

$$-5, -1, 3, 7, \ldots$$

A 2
B 4
C 6
D 8

40 Which is *not* an expression?

F $5 + 4y$
G $x - 1 = 7$
H $4 + 1$
J $3abc$

41 What value of p makes this true?

$$p - (-4) = 8$$

A -12
B -4
C 4
D 12

42 How do you express

***The product of four and a number, decreased by seven*?**

F $4(x - 7)$
G $4(7 - x)$
H $7 - 4x$
J $4x - 7$

GO ON

43 Which table contains *only* values that satisfy the following?

$$y = x - 1$$

A

x	y
-1	-2
0	-1
1	2

B

x	y
-1	0
0	1
1	2

C

x	y
0	1
1	0
2	1

D

x	y
0	-1
1	0
2	1

44 Beth is $\frac{1}{4}$ Carol's age. Beth is 2 years old. What is Carol's age?

F 1 year old
G 2 years old
H 4 years old
J 8 years old

45 Which phrase best represents the following?

$$2x - 8$$

A Eight less than twice a number
B Twice a number less than eight
C Eight less than a number squared
D A number squared less than eight

46 Which represents *all* the values for a that make the following true?

$$a + 8 \geq 4$$

F $a \leq -4$
G $a \geq -4$
H $a \leq -12$
J $a \geq -12$

GO ON

47 Which statement is *false*?

A An equation must have an equal symbol.

B An equation states that two expressions are equal.

C An equation always contains variables.

D An equation always contains terms.

48 What is the 6th term of the geometric sequence shown?

80, 40, 20, . . .

F 1

G $1\frac{1}{4}$

H $2\frac{1}{2}$

J 5

49 What value of d makes this number sentence true?

$$\frac{d}{3} = -27$$

A -81

B -9

C 9

D 81

50

Twice the number of students in Juan's class divided by five is ten.

Which best represents the sentence above?

F $\frac{2j}{5} = 10$

G $\frac{j^2}{5} = 10$

H $\frac{2j}{5} + 10$

J $\frac{j^2}{5} + 10$

STOP

Answer Key

Test Sequence Number	Correct Answer	Reporting Category	Reporting Category Description
1	C	006	Computation and Estimation
2	J	006	Computation and Estimation
3	A	006	Computation and Estimation
4	H	006	Computation and Estimation
5	C	006	Computation and Estimation
6	G	006	Computation and Estimation
7	C	006	Computation and Estimation
8	J	005	Number and Number Sense
9	B	005	Number and Number Sense
10	J	005	Number and Number Sense
11	A	005	Number and Number Sense
12	H	005	Number and Number Sense
13	C	005	Number and Number Sense
14	G	005	Number and Number Sense
15	C	007	Measurement and Geometry
16	G	007	Measurement and Geometry
17	B	007	Measurement and Geometry
18	F	007	Measurement and Geometry
19	A	007	Measurement and Geometry
20	G	007	Measurement and Geometry
21	D	007	Measurement and Geometry
22	F	007	Measurement and Geometry
23	D	007	Measurement and Geometry
24	G	007	Measurement and Geometry
25	D	007	Measurement and Geometry
26	F	007	Measurement and Geometry
27	C	008	Probability and Statistics
28	G	008	Probability and Statistics
29	A	008	Probability and Statistics
30	G	008	Probability and Statistics
31	C	008	Probability and Statistics
32	F	008	Probability and Statistics
33	C	008	Probability and Statistics
34	J	008	Probability and Statistics
35	D	008	Probability and Statistics
36	J	008	Probability and Statistics
37	A	008	Probability and Statistics
38	J	008	Probability and Statistics
39	B	009	Patterns, Functions, and Algebra
40	G	009	Patterns, Functions, and Algebra
41	C	009	Patterns, Functions, and Algebra
42	J	009	Patterns, Functions, and Algebra
43	D	009	Patterns, Functions, and Algebra
44	J	009	Patterns, Functions, and Algebra
45	A	009	Patterns, Functions, and Algebra
46	G	009	Patterns, Functions, and Algebra
47	C	009	Patterns, Functions, and Algebra
48	H	009	Patterns, Functions, and Algebra
49	A	009	Patterns, Functions, and Algebra
50	F	009	Patterns, Functions, and Algebra

Grade 7 Plain English
Mathematics, Core 1

If you get this many items correct:		Then your converted scale score is:
0		000
1		044
2		100
3		135
4		160
5		181
6		197
7		212
8		226
9		237
10		248
11		259
12		269
13		278
14		287
15		295
16		304
17		311
18		319
19		326
20		333
21		341
22		348
23		356
24		363
25		370
26		377
27		384
28		391
29		398
30		**405**
31		412
32		420
33		428
34		436
35		444
36		452
37		461
38		470
39		480
40		490
41		**502**
42		514
43		527
44		542
45		559
46		580
47		600
48		600
49		600
50		600